

What is claimed is:

1. A compliant wheel, comprising:
  - a hub;
  - a compliant band disposed radially outward of the hub; and,
  - a plurality of tensile force transmitting elements extending between the hub and the compliant band and connected thereto, wherein, the tensile force transmitting elements transmit tensile force between the hub and ring, and transmit no substantial force in compression.
2. The compliant wheel as claimed in claim 1, further comprising a reinforcing ply embedded in the band.
3. The compliant wheel according to claim 2, wherein the reinforcing ply comprises at least one layer of essentially inextensible cord reinforcements embedded in an elastomeric coating layer having a shear modulus of elasticity at least equal to the shear modulus of elasticity of the compliant band.
4. The compliant wheel as claimed in claim 2, wherein the reinforcing ply is located at approximately the neutral axis of the band.
5. The compliant wheel as claimed in claim 2, wherein the reinforcing ply is located at radially inward of the neutral axis of the band.
6. The compliant wheel as claimed in claim 1, further comprising a tread formed on a radially outer surface of the band.
7. The compliant wheel as claimed in claim 1, wherein the compliant band is formed of an elastomeric material having an elastic modulus of about 9 MPa to about 60 MPa.
8. The compliant wheel according to claim 1, wherein the tensile force transmitting elements comprise web spokes extending transversely across the compliant band.

9. The compliant band as claimed in claim 8, wherein the web spokes are oriented parallel to the axial direction.
10. The compliant wheel according to claim 8, wherein each web spoke is oriented oblique to the axial direction.
11. The compliant wheel according to claim 10, wherein mutually adjacent web spokes are oriented at opposite oblique angles to the axial direction.
12. The compliant wheel according to claim 8, wherein mutually adjacent web spokes are oriented at opposite oblique angles to the radial direction forming a zig-zag in the equatorial plane.
13. The compliant wheel according to claim 8, wherein the plurality of web spokes are oriented in crossed pairs forming a repeating X-pattern in the equatorial plane.
14. The compliant wheel according to claim 8, wherein the web spokes have a curvature in the equatorial plane to facilitate bending when under compression in the radial direction.
15. The compliant wheel according to claim 8, wherein a first plurality of web spokes is oriented parallel to the axial direction and a second plurality of web spokes is oriented perpendicular to the axial direction.
16. The compliant wheel according to claim 8, wherein each web spoke has a thickness that is not more than about 5% of a radius of the compliant wheel.

17. The compliant wheel according to claim 8, wherein the web spokes are formed of an elastomeric material having an elastic modulus of about 9 to 60 MPa.

18. The compliant wheel according to claim 8, wherein the compliant band and the plurality of web spokes are an integrally molded unit formed of a single material.

19. A compliant wheel, comprising:

a hub;

a compliant band of elastomeric material disposed radially outward of the hub;

a reinforcing ply embedded in the band; and,

a plurality of flexible web spokes extending between the compliant band and the hub, wherein the compliant band and the plurality of web spokes are an integrally molded unit formed of a single material.